a high-carbohydrate diet, which promotes hyperphagia, or a control diet for five months. Blood pressures were measured throughout the study (tail-cuff technique in awake rats). At the end of the study, body weight, blood parameters and LV weight were determined, and LV dimensions and function were assessed using echocardiography in intact rats and in isolated, perfused heart preparations.

The diet resulted in an increase in body weight in both WKY and SHR without modifying systolic BP, blood glucose concentrations and percentage HbA_{1c}. Although the diet increased LV dimensions in both WKY and SHR, when adjusting for differences in body weight, the diet produced an increased LV end-diastolic cross-sectional area (LVED area) (Table), and a right shift in the LV diastolic pressure–volume relations with an increase in volume intercept of the relationship (LV V_0) in SHR, but not in WKY rats (Table). This was not accompanied by an increase in LV weight when adjusted for body weight (Table). Moreover, the diet reduced LV endocardial fractional shortening (LV FS) (Table) and produced a right shift in the LV systolic pressure–volume relations ($p < 0.05$ over a range of filling volumes) in SHR, but not in WKY rats.

	WKY ($n = 12$)	*SHR* ($n = 11$)	*WKY-diet* ($n = 19$)	*SHR-diet* ($n = 10$)
LV weight/100 g BW (g)	0.23 ± 0.01	0.35 ± 0.03*	0.21 ± 0.03	0.36 ± 0.07*
LV ED area/100 g BW (mm^2/100g)	8.97 ± 0.50	6.88 ± 0.59*	9.05 ± 0.44	9.37 ± 0.89†
LV V_0/100 g BW (ml/100 g x10)	0.36 ± 0.02	0.23 ± 0.02*	0.34 ± 0.02	0.39 ± 0.08†
LV FS (%)	50.2 ± 3.2	71.8 ± 2.2*	49.7 ± 3.3	61.4 ± 4.0*†

BW, body weight; *$p < 0.05$ vs respective WKY group; †$p < 0.05$ vs SHR group.

Conclusion: compensated LVH increases the susceptibility of the myocardium to the adverse cardiac effects of obesity, and obesity therefore promotes the transition to cardiac dilatation and pump dysfunction in hypertension.

PREFERRED CLINICAL INDEX OF ADIPOSITY WHEN PREDICTING AMBULATORY BLOOD PRESSURE

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Ambulatory blood pressure (BP) is a better index of cardiovascular outcomes than conventional BP. Although indices of central adiposity (waist circumference and waist-to-hip ratio) are better predictors of conventional BP than body mass index (BMI) or skin-fold thickness, the preferred clinical index of adiposity when predicting ambulatory blood pressure (BP) has not been identified.

The relationship between indices of adiposity (WC, waist-to-hip ratio, BMI or skin-fold thickness) and ambulatory (Spacelabs model 90207) or clinic BP was determined in 300 randomly selected subjects of African descent living in an urban developing community in South Africa. Relationships were determined with multiple indices of adiposity in the same regression model and after adjusting for age, gender, alcohol and tobacco intake, the presence or absence of diabetes mellitus or inappropriate blood glucose control (HbA_{1c}), antihypertensive therapy and menopausal status.

Of the subjects, 65% were overweight or obese. All indices of adiposity were correlated with each other, but BMI and WC showed the strongest relationship ($p < 0.00001$). After including all indices of adiposity and confounders in the model, WC was the only clinical index of adiposity which independently predicted 24-hour (partial $r = 0.15$, $p < 0.005$) and clinic (partial $r = 0.42$, $p < 0.005$) systolic BP and 24-hour (partial $r = 0.13$, $p < 0.02$) and clinic (partial $r = 0.40$, $p < 0.0001$) diastolic BP. After adjusting for other adiposity indices and confounders, every 1-SD (15-cm) increase in WC resulted in a 4.04-mmHg increase in 24-hour systolic BP and a 4.33-mmHg increase in 24-hour diastolic BP. The outcomes were similar when assessing relationships between indices of adiposity and both daytime and night time BP.

Conclusion: These data suggest that WC is the preferred clinical index when predicting ambulatory BP, a measurement that is more closely associated with cardiovascular outcomes than conventional BP.

ADIPOSITY COMPOUNDS THE IMPACT OF CONVENTIONAL AND AMBULATORY BLOOD PRESSURE ON LEFT VENTRICULAR MASS INDEX

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Although it is well established that body size and blood pressure (BP) are independent predictors of LV mass (LVM), it is uncertain whether synergy between BP and adiposity compound the independent actions on LVM and the importance of this effect.

We assessed, with high-quality echocardiograms, the independent and interactive relationships between BP and indices of adiposity [body mass index (BMI), waist circumference (WC) and skin-fold thickness] as predictors of LVM indexed for height$^{2.7}$ (LVMI) in 316 randomly selected subjects of African descent. BP was assessed using conventional and ambulatory (Spacelab model 90207 monitors, $n = 237$) techniques.

LVMI was independently associated with interactions between conventional systolic BP (SBP) and either BMI ($p < 0.0001$), WC ($p < 0.0001$) or skin-fold thickness ($p < 0.0001$). LVMI was similarly independently associated with interactions between 24-hour SBP and either BMI ($p < 0.0001$) or WC ($p < 0.0001$). In the regression models with interactive terms, the interactive effects of either conventional or 24-hour SBP and indices of adiposity accounted for more of the variance of LVMI than the individual effects. The adjusted slopes of the regression relations between LVMI and conventional SBP was greater in obese ($n = 124$) and overweight ($n = 92$) than lean ($n = 100$) subjects (obese = 0.36 ± 0.06; overweight = 0.23 ± 0.05, lean = 0.05 ± 0.04, $p < 0.0001$). Similarly, the adjusted slope of the relations between LVMI and 24-hour SBP was greater in obese ($n = 92$) and overweight ($n = 69$) than lean ($n = 76$) subjects (obese = 0.26 ± 0.11; overweight = 0.24 ± 0.10, lean = 0.004 ± 0.071, $p < 0.0001$).

In conclusion, the presence of increased adiposity does not just add to, but considerably potentiates the impact of either conventional or 24-hour SBP on the LVM.

THE EFFECT OF URBANISATION AND COPING ON VASCULAR REACTIVITY AND METABOLIC SYNDROME INDICATORS IN AFRICANS: THE THUSA STUDY

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